

2023 Vehicle Technologies Office Annual Merit Review

Materials Technology R&D - Composites (MAT) Detailed Schedule

Tuesday, June 13, 2023	
10:30 AM	MAT146: Ultra-Lightweight, Ductile Carbon-Fiber Reinforced Composites, Seokpum Kim, ORNL
10:45 AM	
11:00 AM	MAT174: Carbon-Fiber Technology Facility (CFTF), Merlin Theodore, ORNL
11:15 AM	
11:30 AM	MAT196: High Temperature Carbon Fiber Carbonization via Electromagnetic Power, Felix Paulauskas, ORNL
11:45 AM	
12:00 PM	MAT118: Functionally Designed Ultra-Lightweight Carbon-Fiber Reinforced Thermoplastic Composites Door Assembly, Srikanth Pilla, Clemson University
12:15 PM	
12:30 PM	Time Buffer
12:40 PM	Lunch Break
1:40 PM	MAT197: Multi-Functional Smart Structures for Smart Vehicles, Patrick Blanchard, Ford
1:55 PM	
2:10 PM	MAT198: Development of Tailored Fiber Placement, Multi-Functional, High-Performance Composite Material Systems for High Volume Manufacture of Structural Battery Enclosure, Venkat Aitharaju, GM
2:25 PM	
2:40 PM	MAT199: Ultra-Lightweight Thermoplastic Polymer/Polymer Fiber Composites for Vehicles (Inter-Lab Project), Kevin Simmons, PNNL
2:55 PM	
3:10 PM	Time Buffer
3:15 PM	Break
3:45 PM	MAT200: Additive Manufacturing for Property Optimization for Automotive Applications, Seokpum Kim, ORNL
4:00 PM	
4:15 PM	MAT201: Additively Manufactured, Lightweight, Low-Cost Composite Vessels for Compressed Natural Gas Fuel Storage, James Lewicki, LLNL
4:30 PM	
4:45 PM	MAT202: 3D Printed Hybrid Composite Materials with Sensing Capability for Advanced Vehicles, Rigoberto Advincula, ORNL
5:00 PM	
5:15 PM	Day 1 Ends

Wednesday, June 14, 2023	
10:00 AM	MAT203: Low-Cost, High-Throughput Carbon Fiber with Large Diameter, Felix Paulauskas, ORNL
10:15 AM	
10:30 AM	MAT204: New Frontier in Polymer Matrix Composites via Tailored Vitrimer Chemistry, Tomonori Saito, ORNL
10:45 AM	
11:00 AM	MAT205: Adopting Heavy-Tow Carbon Fiber for Repairable, Stamp-Formed Composites, Amit Naskar, ORNL
11:15 AM	
11:30 AM	MAT206: Soft Smart Tools Using Additive Manufacturing, Jay Gaillard, SRNL
11:45 AM	
12:00 PM	MAT207: Multi-Material, Functional Composites with Hierarchical Structures, Christopher Bowland, ORNL
12:15 PM	
12:30 PM	Time Buffer
12:40 PM	Lunch Break
1:40 PM	MAT208: Efficient Synthesis of Kevlar and Other Fibers from Polyethylene Terephthalate (PET) Waste, Daniel Merkel, PNNL
1:55 PM	
2:10 PM	MAT209: Bio-based, Inherently Recyclable Epoxy Resins to Enable Facile Carbon-Fiber Reinforced Composites Recycling, Nicholas Rorrer, NREL
2:25 PM	
2:40 PM	MAT210: A Novel Manufacturing Process of Lightweight Automotive Seats - Integration of Additive Manufacturing and Reinforced Polymer Composite, Patrick Blanchard, Ford
2:55 PM	
3:10 PM	Time Buffer
3:15 PM	Break
3:45 PM	MAT211: Sustainable Lightweight Intelligent Composites (SLIC) for Next-Generation Vehicles, Masato Mizuta, Newport Sensors, Inc.
4:00 PM	
4:15 PM	MAT212: Integrated Self sufficient Structurally Integrated Multifunctional Sensors for Autonomous Vehicles, Amrita Kumar, Acellent Technologies, Inc.
4:30 PM	
4:45 PM	MAT216: Low Cost Resin Technology for the Rapid Manufacture of High-Performance Fiber Reinforced Composites, Henry Sodano, Trimer Technologies, LLC
5:00 PM	
5:15 PM	Day 2 Ends

Thursday, June 15, 2023	
10:00 AM	MAT254: Conductive Lightweight Hybrid Polymer Composites from Recycled Carbon Fibers, Yinghua Jin, RockyTech
10:15 AM	
10:30 AM	MAT215: Short Fiber Preform Technology for Automotive Part Production, Dirk Heider, Composites Automation, LLC
10:45 AM	
11:00 AM	MAT257: Changing the Design Rules of Rubber to Create Lighter Weight, More Fuel Efficient Tires, Kurt Swogger, Molecular Rebar Design LLC
11:15 AM	
11:30 AM	MAT253: Flexible, Lightweight Nanocomposites for EMI Shielding Suppression in Automotive Applications, Patrick Lake, Applied Sciences, Inc.
11:45 AM	
12:00 PM	
12:15 PM	
12:30 PM	Time Buffer
12:40 PM	Lunch Break
1:40 PM	MAT256: Game Changing Resin/Coating/Adhesive Technology for Lightweight Affordable Composites, Scott Lewit, Structural Composites, Inc.
1:55 PM	
2:10 PM	MAT259: Green Composites Fabricated from Bacteria Retted Bast Fiber and PLA for light weight vehicle Components, Lee Smith, Z & S Tech, LLC
2:25 PM	
2:40 PM	MAT260: Green Composites from Carbonated Bio-based Oils and Recycled Nanofibers, Jesse Kelly, Luna Labs USA
2:55 PM	
3:10 PM	MAT261: Multiscale Bioinspired Enhancement of Natural-Fiber Composites For Green Vehicles, Lorenzo Mencattelli, Helicoid Industries, Inc.
3:15 PM	
3:45 PM	MAT262: Sustainable Automotive Composites Using Surface-Modified Cellulose Fibers, Girish Srinivas, TDA Research, Inc.
4:00 PM	
4:15 PM	Time Buffer
4:30 PM	Break
4:45 PM	MAT263: Green Polybenzoxazine/Natural Fiber Composites for Transportation, Christopher Scott, Material Answers, LLC.
5:00 PM	
5:15 PM	MAT264: Green composites for future vehicles: Vitrimer matrix + natural and recycled fiber composite materials for high performance, repairable, recyclable, and bio-sourced automotive components, Philip Taynton, Mallinda, Inc.
5:30 PM	
5:45 PM	AMR Ends

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Materials Technology R&D – Joining, Metals, Propulsion Materials (MAT) Detailed Schedule

Tuesday, June 13, 2023	
11:00 AM	MAT159: Cost Effective Lightweight Alloys for Electric Vehicle Propulsion: Fundamental Fatigue and Creep in Advanced Lightweight Alloys, Amit Shyam, ORNL
11:15 AM	
11:30 AM	MAT160: Cost Effective Lightweight Alloys for Electric Vehicle Propulsion: Hybrid Dispersion Strengthened AL matrix composites for higher efficiency EV powertrains, Mert Efe, PNNL
11:45 AM	
12:00 PM	MAT221: Lightweight and Highly-Efficient Engines Through Al and Si Alloying of Martensitic Materials, Dean Pierce, ORNL
12:15 PM	
12:30 PM	Time Buffer
12:40 PM	Lunch Break
1:40 PM	MAT237: Materials, Lubricants, and Cooling for Heavy Duty Electric Vehicles, Jun Qu, ORNL
1:55 PM	
2:10 PM	MAT241: Advanced Processing and Additive Manufacturing for EV Propulsion: Advanced Ceramics and Processing for Wireless Charging Systems, Beth Armstrong, ORNL
2:25 PM	
2:40 PM	MAT242: Advanced Processing and Additive Manufacturing for EV Propulsion: Novel Ultra High Conductivity Composites for EVs, Tolga Aytug, ORNL
2:55 PM	
3:10 PM	Time Buffer
3:15 PM	Break
3:45 PM	MAT236: Advanced Characterization and Computational Methods, Thomas Watkins, ORNL
4:00 PM	
4:15 PM	MAT222: Extending Ultrasonic Welding Techniques to New Material Pairs, Jian Chen, ORNL
4:30 PM	
4:45 PM	MAT223: Extending High Rate Riveting to New Material Pairs, Kevin Simmons, PNNL
5:00 PM	
5:15 PM	Day 1 Ends

Wednesday, June 14, 2023	
10:00 AM	MAT224: Solid State Joining of Multi-Material Autobody Parts Toward Industry Readiness, Yong Chae Lim & Piyush Upadhyay, ORNL & PNNL
10:15 AM	
10:30 AM	MAT225: Surface Modifications for Improved Joining and Corrosion Resistance, Yong Chae Lim & Vineet Joshi, ORNL & PNNL
10:45 AM	
11:00 AM	MAT226: Machine Learning for Joint Quality and Control, Zhili Feng & Keerti Kappagantula, ORNL & PNNL
11:15 AM	
11:30 AM	MAT152: A Hybrid Physics-Based, Data-Driven Approach to Model Damage Accumulation in Corrosion of Polymeric Adhesives, Roozbeh Dargazany, Michigan State University
11:45 AM	
12:00 PM	
12:15 PM	
12:30 PM	Time Buffer
12:40 PM	Lunch Break
1:40 PM	
1:55 PM	MAT243: Manufacturing Demonstration of a Large-scale, Multi-material Passenger Vehicle Sub-system, Srikanth Pilla, Clemson University
2:10 PM	
2:25 PM	MAT149: Shear Assisted Processing and Extrusion (ShAPE) of Lightweight Alloys for Automotive Components, Scott Whalen, PNNL
2:40 PM	
2:55 PM	Time Buffer
3:10 PM	
3:15 PM	Break
3:45 PM	MAT229: Development of a Novel Magnesium Alloy for Thixomolding of Automotive Components, Govindarajan Muralidharan & Bryan Macek, ORNL & FCA LLC
4:00 PM	
4:15 PM	MAT231: Light Metals Core Program Introduction, Glenn Grant, PNNL
4:30 PM	
4:45 PM	MAT244: LMCP P1A - Sheet Materials with Local Property Variation, Scott Whalen, PNNL
5:00 PM	
	Day 2 Ends

Thursday, June 15, 2023	
10:00 AM	MAT245: LMCP P1B - Form-and-Print - AM for Localized Property Enhancement of High-strength Al sheet, Alex Plotkowski, ORNL
10:15 AM	
10:30 AM	MAT246: LMCP P1C - Local Thermomechanical Processing to Address Challenges to Implementing High Strength Al Sheet, Mert Efe & Govindarajan Muralidharan, PNNL & ORNL
10:45 AM	
11:00 AM	MAT247: LMCP P2A - Solid Phase Processing of Aluminum Castings, Saumyadeep Jana & Zhili Feng, PNNL & ORNL
11:15 AM	
11:30 AM	MAT248: LMCP P2B - High Intensity Thermal Treatment, Aashish Rohatgi, PNNL
11:45 AM	
12:00 PM	MAT249: LMCP P2C - Cast-and-Print - AM for Localized Property Enhancement of Al castings, Alex Plotkowski, ORNL
12:15 PM	
12:30 PM	Time Buffer
12:40 PM	Lunch Break
1:40 PM	MAT250: LMCP P3A - Cast Magnesium Local Corrosion Mitigation, Vineet Joshi & Jiheon Jun, PNNL & ORNL
1:55 PM	
2:10 PM	MAT251: LMCP P3B - Thermomechanical Property Modification of Mg Castings, Mageshwari Komarasamy, PNNL
2:25 PM	
2:40 PM	MAT235: Light Metals Core Program - Thrust 4 - Residual Stress Effects, Ayoub Soulami, PNNL
2:55 PM	
3:10 PM	Time Buffer
3:15 PM	Break
3:45 PM	MAT252: LMCP - Thrust 4 - Materials Lifecycle, Jeff Spangenberg, ANL
4:00 PM	
4:15 PM	AMR Ends